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October ??, 2001

Ms. Jan Sensibaugh, Administrator
Montana Department of Environmental Quality
1520 East Sixth Avenue
P.O. Box 200901
Helena, Montana 59620-0901

and

Mr. Bob Castaneda, Supervisor
Kootenai National Forest
506 Highway 2 West
Libby, Montana 59923

Re: Rock Creek Project FEIS

Dear Ms. Sensibaugh and Mr. Castaneda:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Environmental Protection Agency, Region VIII, Montana Office (EPA) reviewed the Rock Creek Project Final Environmental Impact Statement (FEIS).

The EPA recognizes and acknowledges that many modifications and additional monitoring and mitigation measures have been incorporated into the current preferred alternative, Alternative V, for the proposed Rock Creek Mine project since the original Draft EIS was issued in October 1995, and the Supplemental Draft EIS was issued in February 1998. We believe the current preferred alternative, Alternative V, is much improved, and results in reduced levels of environmental risk than the original proposal. We are pleased that several of our recommendations, including improved water treatment, consideration of paste tailings disposal, and improved water resources, hydrological, aquatic, and geochemical monitoring have been incorporated into the preferred alternative.

Our primary remaining environmental concerns regarding the Rock Creek Mine project revolve around geochemical and hydrological uncertainties, and the procedures for evaluating monitoring data and making mine development decisions after assessment and evaluation of monitoring results. We remain concerned about the potential for the Rock Creek Mine to result in transport of mine drainage/seepage with elevated metals levels (particularly copper) into surface and ground waters, since there are metal bearing sulfidic minerals present in and near the ore body. The EPA believes that elevated copper levels in water from the underground workings in the Troy Mine and in Troy impoundment seepage (at levels evidencing acute and chronic

toxicity to aquatic life) may be related to oxidation of sulfide minerals at pH neutral conditions, and this may indicate potential for similar elevated copper levels in mine drainage at the Rock Creek Mine.

The Montana Dept. of Environmental Quality (MDEQ) and Kootenai National Forest (KNF) have made important progress to address uncertainties by including conceptual monitoring plans for Acid Rock Drainage and Metals Leaching, Evaluation Adit Data Evaluation, Rock Mechanics, Monitoring Alert Levels and Contingency/Corrective Actions, Water Resources, Aquatic/Fisheries, and Springs and Seeps Vegetation in Appendix K. The development of these conceptual monitoring plans at the FEIS stage, with the commitment to develop more detailed comprehensive monitoring and evaluation plans, and contingency and corrective action plans, during the subsequent evaluation adit and mine development stages reduces concerns that environmental impacts will occur and not be detected.

As we have previously indicated, the EPA is cooperating with the MDEQ and KNF on the lead agencies favored course of action to proceed with a single stage permitting process for both the exploration or evaluation adit and the mine at this time with the acknowledgment that there will be a thorough review and assessment of data collected during construction of the evaluation adit before the lead agencies consider the decision for full mine development and operation, including driving the mine development adits into the ore body.

We want to make it clear, however, that the EPA still believes the most prudent course of action is to have a two stage permitting process that initially permits development of the evaluation adit to allow geochemical and hydrological uncertainties and concerns, particularly the metal leaching and acid rock drainage (ARD) concerns to be thoroughly and completely evaluated before a second permitting decision is subsequently considered to proceed with full mine development and operation. The EPA considers this approach to be the most prudent option to assure thorough investigation of evaluation adit data before a decision is made to proceed with full mine development. We recognize that the MDEQ and KNF do not favor this option of two stage mine permitting, since the lead agencies believe adequate geochemical and hydrological information can be obtained during evaluation adit construction to allow for adequate mine development decision making in a one stage permitting process.

As noted, we are pleased that our recommendations for preparation of an Acid Rock Drainage and Metals Leaching Plan and Evaluation Adit Data Evaluation Plan have been followed to help assure that adequate geochemical and hydrological data will be collected and evaluated during evaluation adit construction and preliminary mine development, and that necessary changes to the mine plan/design based on evaluation of evaluation adit data will be made to assure that major environmental problems will not occur during full mine development and operation, particularly metal leaching problems.

The FEIS states that evaluation adit geochemical and hydrological data will be reviewed and approved by the lead agencies in the form of an agency technical panel or third party reviewer before lead agency approval of full mine development would be allowed (page K-2). The participants on this technical panel, however, are not identified. It is our understanding per

prior discussions, that EPA will be given an opportunity to have a representative(s) participate on this evaluation adit technical review panel. We recommend that the Record of Decision (ROD) identify the agencies and entities that will have the opportunity to participate on this technical panel, including EPA.

We also want to indicate, as we have in earlier correspondence, that the static and kinetic testing proposed during evaluation adit testing has limitations and deficiencies in predicting metal leaching and acid rock drainage (ARD). The geochemical and ARD experts with whom EPA staff are communicating have initiated a process to address the limitations and deficiencies of the existing kinetic and static testing procedures. In the U.S. ARD evaluation work is being organized under a program called the Acid Drainage Technology Initiative (ADTI).

The ADTI group, which has met in recent years in Denver and Salt Lake City, includes the mining industry, consultants, and State and Federal agencies. The ADTI is reviewing and developing improved ARD sampling and analysis procedures, improved predictive methodology, modeling, and mitigation methods. It is expected that potentially superior ARD/metal leaching evaluation procedures compared to the existing kinetic and static test procedures, complete with ASTM certifications, may be available at some point in the future.

Revised ARD prediction procedures may be available for use before the Rock Creek Mine development proceeds. We recommend that any new ADTI procedures that are developed that improve upon existing static and kinetic tests be considered for geochemical evaluation at Rock Creek. The EPA recommends that the Rock Creek Mine geochemical testing technical panel make efforts to consult with the ADTI on geochemical testing before any decisions are made to proceed with full Rock Creek Mine development while evaluation adit geochemical testing is underway, and that this be acknowledged in the ROD.

A technical review panel is also proposed to review final design of the paste tailings facility (pages 2-104, 4-39). Environmental impacts will be influenced by the decisions made by this panel (e.g., review of seepage volume and quality, paste deposit underdrain collection system design, ground water monitoring system design, contingency pumpback well system design, addition of amendments such as cement to the paste to improve water quality of paste seepage and stability of deposit, etc.). We note that participants on this technical review panel are also not identified. It is our understanding per earlier discussions with the lead agencies that the EPA will also be given an opportunity to have a representative(s) participate on this paste tailings deposit technical review panel. We recommend that the ROD identify the agencies and entities that will have an opportunity to participate on this technical review panel, including EPA. It is also not clear if EPA will be allowed to have a role in evaluating the water resources monitoring plan that will be developed by the mining company and the lead agencies? This should also be clarified in the ROD.

We also want to indicate in regard to cement addition to the paste tailings, that the EPA believes that the lead agencies recommended plan in the FEIS/ROD should be to require some level of cement addition to the paste as a means to reduce or mitigate the potential generation of deleterious leachate, until it can be conclusively determined that paste deposit leachate will not

result in deleterious water quality degradation. Given the uncertainties in tailings paste seepage water chemistry (until adequate long term geochemical analysis and testing is done on Rock Creek tailings), and given the advantages of cement addition, we believe this is the prudent environmentally protective course of action.

We agree that the potential exists to modify, reduce or even eliminate cement addition over time depending upon geochemical data (as noted in the EIS) if it can be shown that deleterious metal containing leachate would not seep to ground water, and that stability concerns don't require cement addition. However, we believe that the prudent environmentally protective stance, that errs on the side of protection of ground water quality, is to indicate that cement would be added until the paste deposit drainage water chemistry can be shown to be protective of water quality, and stability of the deposit is demonstrated. We also suggest that requiring cement addition at the onset, with the burden of proof on the company and technical review panel to show that water quality will be protected without cement addition, will provide incentive to the mining company to carry out timely and comprehensive geochemical testing and evaluation, since they are likely to want to reduce cement addition to reduce operational costs as much as possible. We do not believe that operational costs should be reduced at the expense of the environment.

We also note that there would be 2 to 3 ½ years of mine development adit construction before the mine began to produce ore rock that would be processed to generate tailings. This should allow significant time for geochemical testing and evaluation of tailings materials for determination of paste deposit seepage quality with and without cement. This would allow time for the company to gather data to try to reduce the level of cement addition, or eliminate cement addition.

There are also concerns that many of the important mine project elements and features that influence the level of environmental impacts are being deferred to a post-EIS/ROD, post NEPA compliance time frame (e.g., development of detailed comprehensive monitoring plans deferred to later dates, and critical mine design features such as evaluation adit geochemical and hydrological data collection and evaluation, and paste deposit design deferred to technical review panels). We do not believe that crucial environmental information associated with mine development and operation should be deferred to a post-EIS, post-NEPA time frame without some means of public participation. The Evaluation Adit Data Evaluation Plan indicates that if data were substantially different from that anticipated and used in the analyses in the FEIS all appropriate facility designs would be modified and approved by the lead agencies to ensure that impacts would be no greater than as disclosed in the FEIS (page K-16).

We are pleased that the lead agencies propose to conduct such a review of evaluation adit data and compare actual impacts vs. those disclosed in the FEIS, but we believe it is important that the public be given an opportunity to review and comment on evaluation adit test results and decisions emerging out of review of evaluation adit data, and to review and comment on paste tailings facility design decisions that influence levels of environmental impacts. We believe it is appropriate to develop a process for public review and comment in regard to evaluation adit test results, and paste deposit design, and environmental decision making. We recommend that a public disclosure document be prepared following exploration adit construction and data

evaluation to document the information and data collected during exploration adit construction, and disclose any new requirements that may be proposed based on evaluation of new information.

We are enclosing some additional FEIS comments to further discuss and identify remaining comments and concerns. We appreciate the opportunity to be involved in the NEPA review process with the MDEQ and KNF on this long and complex project, and we thank you for your consideration and cooperation. If you have any questions please feel free to call me at 406- 441-1140 ext. 230, or you may also call Mr. Steve Potts of my staff at 441-1140 ext. 232.

Sincerely,

John F. Wardell,
Director
Montana Office

cc: Cynthia Cody/Julia Johnson, EPA, 8EPR-N, EPA Denver
Carol Russell/Orville Kiehn/Mike Wireman, EPA, 8EPR-EP, Denver
Rodney Schwartz, COE, Regulatory Branch, Omaha
June Bergquist, Idaho WQB, Coeur d'Alene
Mark Wilson, USFWS, Helena
Michael Burnside/Ray Tesoro, USFS, Region 1, L&M
William Riley/Nicholas Ceto EPA, Region 10, Seattle

ENCLOSURE

DRAFT: ADDITIONAL EPA COMMENTS ON THE ROCK CREEK PROJECT FEIS

1. EPA appreciates the inclusion of the Acid Rock Drainage and Metals Leaching, Evaluation Adit Data Evaluation, Rock Mechanics, Monitoring Alert Levels and Contingency/Corrective Actions, Water Resources, Aquatic/Fisheries, and Springs and Seeps Vegetation conceptual monitoring plans in Appendix K. We note that in regard to lead agency approval of evaluation adit geochemical "data sufficiency" (page K-4), it will be important for geochemical testing to include statistically valid sampling of the potential waste rock, paste tailings, and materials exposed underground with kinetic testing of each different sample. We encourage the lead agencies to review Geoffrey S. Plumlee's paper in the *Environmental Geochemistry of Mineral Deposits* in the "1999 Reviews in Economic Geology" ISBN 1-887483-50-0 to assist in the prediction of water quality.

We also want to note that it is important for the lead agencies and technical review panel evaluating geochemical data during evaluation adit development to more clearly identify the definition of "mineralized" waste rock and "NAG/non-ML" waste rock (page K-5) since these definitions will determine waste rock handling procedures (i.e., mineralized waste rock will be placed underground, encapsulated, or in areas where lined leachate and storm water runoff collection and treatment can be provided; and NAG/non-ML waste rock will be used for mill site and paste deposit buttress construction, and for crushed rock for paste deposit underdrain collection system).

2. An issue for which EPA has never received adequate understanding regards why additional geochemical testing has not already been done, or could not be done, on the 121 drill cores that have been drilled on the Rock Creek deposit? The opportunity has been and is present to obtain additional geochemical data on the Rock Creek ore deposit by carrying out kinetic testing on these drill cores. Since as noted earlier kinetic tests may need to be run for periods of years to get adequate results, it would seem that additional kinetic tests on these cores should be initiated as soon as possible to allow long term kinetic test data to be collected before decisions on full mine development are made (including solution analyses for metals during kinetic testing). If this is not done, we believe the FEIS/ROD should include some discussion explaining why geochemical testing of cores has not been done or can not be done?
3. The EPA supports the proposed a 1,000 foot buffer surrounding Cliff Lake, the Copper Lake and Moran faults, and the north and south end ore outcrop zones, as well as a 450 foot vertical buffer between the surface and mine workings that have recently been included for Alternative V. This should reduce potential for seepage into the underground reservoir and potential for draining of the surface lakes overlying the orebody, and reduce subsidence potential. We encourage the lead agencies to continue to evaluate the potential for catastrophic failure due to lateral hydro-fracturing in the mine cavity to the northeast (see Figure 3-2) if the mine is plugged after closure and hydrostatic head builds up in the underground mine pool. The northeast outcrop of the mineralized area may be structurally weakened due to fracturing during ore emplacement. The potential for hydro-fracturing should still be monitored and assessed as it relates to underground mine storage and mine plugging. It may be better to allow the mine to drain freely (no adit plugs at closure) with perpetual water treatment than to plug the adits and exacerbate post-closure leakage of contaminated underground mine water to surface waters.
4. It is stated on page 2-102 that the 1,000 no mining buffer around Cliff Lake, ore outcrop zones, the Copper Lake Fault, and the Moran Fault would remain unmined until the hydrogeology of this area is better characterized through the monitoring process. We believe the ROD should describe how the decision(s) will be made, and who will be involved in the decision making, as to whether or not the 1,000 no mining buffers will be made permanent.
5. The proposal to segregate mine inflow waters is a good idea (page 2-124). Some thought

should be given to how to accomplish this. We have found that it is very common for some mine inflows to be much worse quality than other inflows.

6. We very much appreciate the much improved discussion of the hydrology of Cliff, Copper and St. Paul Lakes on page 3-56.
7. The disclosure of the potential for contaminated seepage impacts from the underground mine pool is much improved in the FEIS. While the disclosure of seepage from the mine pool is improved, EPA remains concerned about the potential for seepage of contaminated mine pool water to surface or ground waters, especially if the mine adits are plugged after mine closure. It is stated in the FEIS (page 4-108) that mine adit drainage would continue to be conveyed to the water treatment facility until discharge limits for nitrogen and metals are met, with the actual limits to be met varying depending upon the type of adit closure selected and the point of discharge and water quality monitoring results. It is still not clear to EPA how the water quality compliance monitoring will be achieved for the underground mine pool to assure that it meets applicable ground-water quality standards. Also, it is important to emphasize that the monitoring plans for water resources, aquatics/fisheries, and springs and seeps will have to include long term monitoring to assure detection of contaminated mine pool drainage that may develop over time and potentially drain/seep to surface and/or ground waters. The additional spring and seep survey that Sterling would complete (page 2-147) is appreciated. however, we recommend that the same spring and seep survey be done annually during the life of the mine and for 20 years after closure.
8. EPA believes that the capture wells and monitoring wells planned for installation below the paste tailings facility should be installed and used/monitored from the beginning of the tailings deposition. We don't believe the capture wells should be constructed only as a contingency.
9. The EPA appreciates the inclusion of Table 1-3 which itemizes bond liabilities for the major reclamation, and environmental control and mitigation measures, including water treatment. Environmental costs are as critical to understand as ore grade, market prices, processing and handling costs, etc.,. The Zortman-Landusky mine in Montana and the Grouse Creek Mine in Idaho provide examples of the problems that can arise when financial assurances inadequately consider potential environmental concerns. Without having a true accounting of environmental costs the mining company may not be in a position to make a sound judgement about the economic viability of the facility. It is important to comprehensively identify environmental mitigations and closure concerns as much as possible up front so that they can be considered as an integral cost of developing and operating the mine, and be a critical element in mine planning and design for mine closure.
10. Appendix D, MPDES Permit Statement of Basis, Table II.B.3.1 (page 42) of the Statement of Basis refers to "grab" samples for ground water samples. We continue to recommend that a "standard ground water sampling protocol" be referred to rather than "

grab" samples since "grab" samples are a surface water sampling term not appropriate for ground water sampling.

11. We continue to note that the Appendix D, Statement of Basis for the MPDES permit (page 35) indicates that the lacustrine silt and clay deposits overlying the basal sand and gravel aquifer have a hydraulic conductivity estimated to be 7.6×10^5 cm/sec, while the basal unit hydraulic conductivity is estimated at 1.3×10^3 cm/sec. These hydraulic conductivities differ from those shown on FEIS Figure 3-12. It is likely that these numbers were intended to be 1.3×10^{-3} cm/sec and 7.6×10^{-5} cm/sec for the basal sand and gravels and lacustrine silts and clays, respectively, since Figure 3-12 (page 3-51) identifies vertical hydraulic conductivities of 2.3×10^{-7} cm/sec and horizontal hydraulic conductivities of 7.4×10^{-5} cm/sec for the shallow lacustrine silt and clay deposits; and vertical hydraulic conductivities of 1.2×10^{-6} cm/sec and horizontal hydraulic conductivities of 7.6×10^{-5} cm/sec for the deeper lacustrine silt and clay deposits; and a hydraulic conductivity of 1.5×10^{-3} cm/sec for the deeper basal sand and gravels. The hydraulic conductivity of the soils beneath the paste deposit in the Statement of Basis should be consistent with Figure 3-12 in the FEIS..
12. We note that the response to comment in Volume IV WTR-302, comment no. 53, indicates that hardness values less than 25 mg/l can not be used for calculating aquatic life criteria for metals. We want to report that recent research has validated that the aquatic life criteria formulas showing metal toxicity varying with hardness can now be used for soft waters with hardness less than 25 mg/l (such as Rock Creek). Please contact Mr. Bill Wuerthele with the EPA Region 8 Denver Office at 303-312-6943 for further information.
13. Page K-9 (bottom) notes that lake levels of Cliff, Copper, St. Paul, Moran Basin and Rock Lakes will be monitored. We note that late summer and early fall monitoring of lake levels is particularly important (when ground water contributes most of the inflow to the lakes). Also if possible, a piezometer should be installed in the Copper Lake fault zone above Cliff Lake. This piezometer would be used to monitor the elevation of the potentiometric surface in the fault zone. This is the best type of monitoring to determine potential reductions of ground water inflow to Cliff Lake.
14. We are pleased that paste tailings would be tested for paste pH and ABA (including total sulfur), and that leach testing of the tailings would also be required, and that testing design and frequency would be subject to agency approval (page K-5). We suggest that total dissolved solids (TDS) or conductivity testing in accordance with Dr. Andrew Mac G. Robertson's procedures demonstrated at Zortman-Landusky and Gilt Edge, South Dakota mines be added to the Rock Creek mine testing protocols. Dr. Robertson's procedure with the paste pH yields improved understanding of deleterious ion mobility potential that is quickly and easily accomplished in the field. For example, a low pH with a relatively high conductivity provides a red flag warning of potential trouble.

15. We also suggest that monitoring reports be prepared initially on a more frequent basis than annually (page K-21). We suggest that monitoring reports initially be submitted monthly until the agencies are convinced that the monthly results are satisfactory, then reporting could be reduced to quarterly, and eventually potentially reduced further to semi-annually, and then annually, if results remain satisfactory. We also believe other agencies and the public should be given an opportunity to review and comment on monitoring reports. It would also be helpful if a summary report of monitoring results was provided by the lead agencies to notify the public whether monitoring results were consistent with EIS predictions.
16. Thank you for including monitoring of seeps and springs near the ore body, and including monitoring at high and low flow conditions as well as seasonal trends (page K-11, K-22). It would be helpful if the springs and seeps were all identified on a map. Such a baseline springs and seeps map will assist in establishing whether new springs or seeps develop or disappear over time.
17. For purposes of complete description of the proposed project and disclosure of potential environmental impacts we continue to believe the FEIS should have identified the probable location(s) of the off-site smelter(s) that are likely to receive and process the metal bearing sulfide concentrate from the Rock Creek Mine (page 2-107). Smelting and refining of metal sulfide concentrate from the Rock Creek Mine is an indirect effect of the mine, and at a minimum, the probable location(s) of such smelters should be disclosed.